



**THE DATASHEET OF
SDP8406-001**

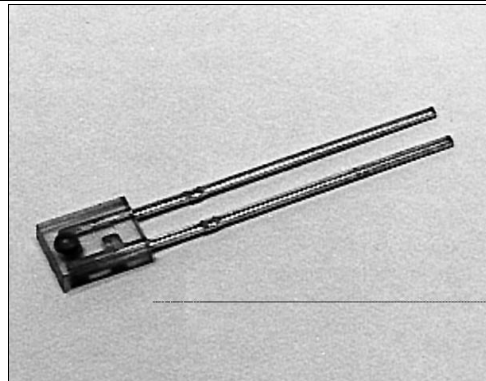


SDP8406

Silicon Phototransistor

FEATURES

- Side-looking plastic package
- 50° (nominal) acceptance angle
- Wide sensitivity ranges
- Mechanically and spectrally matched to SEP8506 and SEP8706 infrared emitting diodes



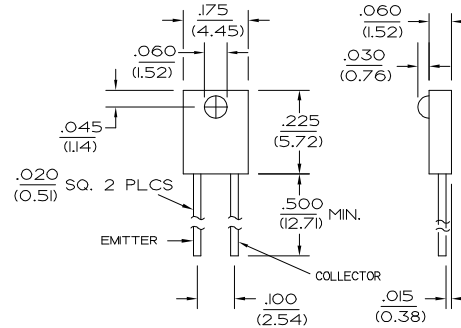
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DESCRIPTION

The SDP8406 is an NPN silicon phototransistor molded in a side-looking clear plastic package. The chip is positioned to accept radiation through a plastic lens from the side of the package.

OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals ±0.005(0.12)
2 plc decimals ±0.020(0.51)



DIM_017.d64

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ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|--------------------------------------|---------------|------|-----|------|---------------|---|
| Light Current | I_L | | | | mA | $V_{CE}=5\text{ V}$ $H=1\text{ mW/cm}^2$ (1) |
| SDP8406-001 | | 0.15 | | 1.90 | | |
| SDP8406-002 | | 1.80 | | 3.60 | | |
| SDP8406-003 | | 3.40 | | 6.50 | | |
| SDP8406-004 | | 6.40 | | 12.0 | | |
| Collector Dark Current | I_{CEO} | | | 100 | nA | $V_{CE}=15\text{ V}$, $H=0$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | 30 | | | V | $I_C=100\text{ }\mu\text{A}$ |
| Emitter-Collector Breakdown Voltage | $V_{(BR)ECO}$ | 5.0 | | | V | $I_E=100\text{ }\mu\text{A}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | | | 0.4 | V | $I_C=I_L/8$ $H=1\text{ mW/cm}^2$ |
| Angular Response (2) | \varnothing | | 50 | | degr. | $I_F=\text{Constant}$ |
| Rise And Fall Time | t_r, t_f | | 15 | | μs | $V_{CC}=5\text{ V}$, $I_L=1\text{ mA}$ $R_L=1000\text{ }\Omega$ |

Notes

1. The radiation source is an IRED with a peak wavelength of 935 nm.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS

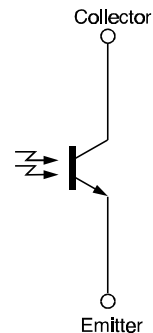
(25°C Free-Air Temperature unless otherwise noted)

| | |
|-------------------------------|---------------|
| Collector-Emitter Voltage | 30 V |
| Emitter-Collector Voltage | 5 V |
| Power Dissipation | 100 mW (1) |
| Operating Temperature Range | -40°C to 85°C |
| Storage Temperature Range | -40°C to 85°C |
| Soldering Temperature (5 sec) | 240°C |

Notes

1. Derate linearly from 25°C free-air temperature at the rate of 0.78 mW/°C.

SCHEMATIC



Honeywell reserves the right to make changes in order to improve design and supply the best products possible.

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SWITCHING TIME TEST CIRCUIT

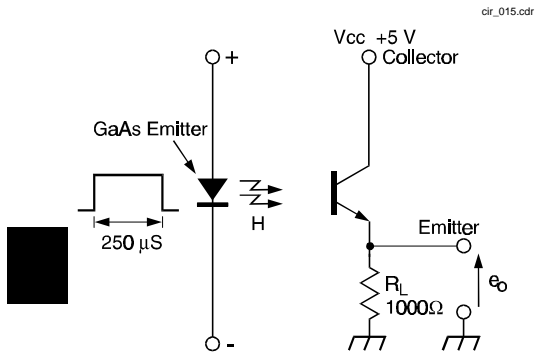


Fig. 1 Responsivity vs Angular Displacement

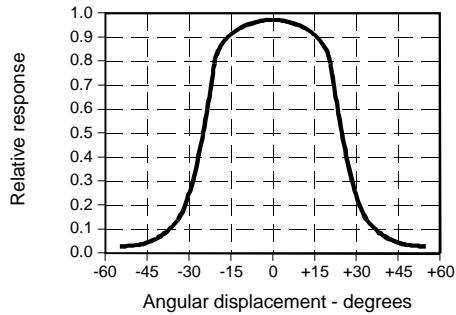
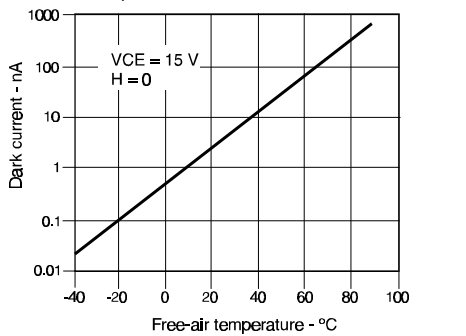


Fig. 3 Dark Current vs Temperature



SWITCHING WAVEFORM

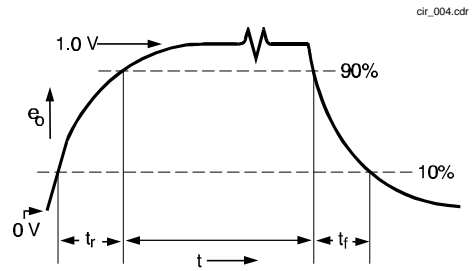


Fig. 2 Collector Current vs Ambient Temperature

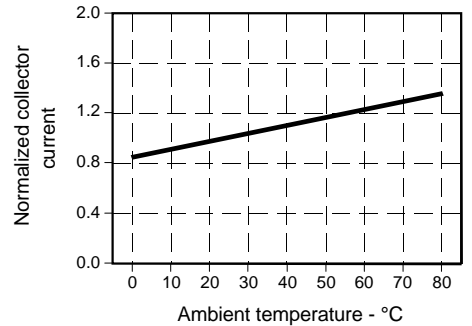
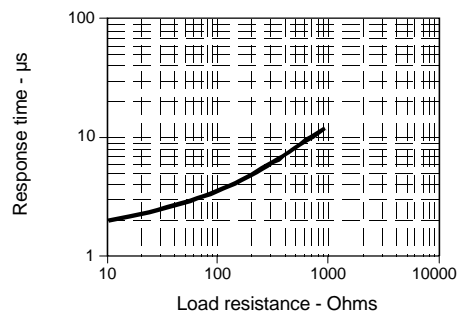


Fig. 4 Non-Saturated Switching Time vs Load Resistance

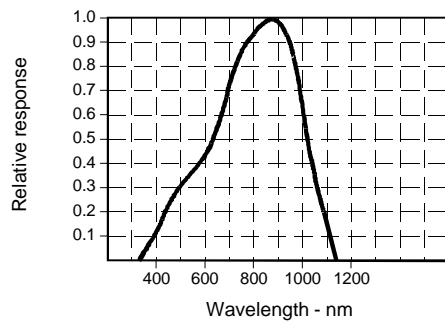


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Fig. 5 Spectral Responsivity

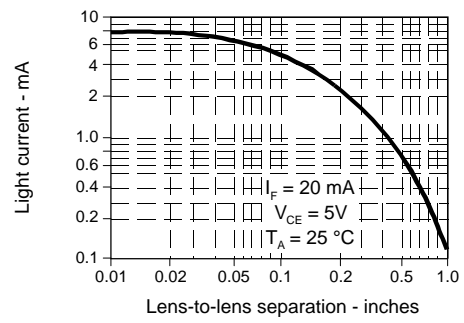
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All Performance Curves Show Typical Values



Fig. 6 Coupling Characteristics with SEP8506

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